Wastewater Management Program

List of Registered On-site Treatment and Distribution Products

As Established in Chapter 246-272A WAC On-site Sewage Systems

July 20, 2006

Washington State Department of Health
Division of Environmental Health

For more information or additional copies of this document, contact:

Wastewater Management Program
Washington State Department of Health
PO Box 47825
Olympia, WA 98504-7825

Phone: (360) 236-3062
FAX: (360) 236-2261
Web: http://www.doh.wa.gov/wastewater.htm

Secretary of Health
Mary Selecky

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NOTE:

The presence of a product on this list does not constitute approval of marketing, advertising, or labeling practices employed by a manufacturer, nor is it an affirmation of manufacturer claims of product performance. Registration listing does not constitute endorsement of these products by the Washington State Department of Health. Information obtained from the sources listed is the sole responsibility of the manufacturer or other provider.

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SECTION 1 – Introduction and Overview

Chapter 246-272A WAC establishes a process for proprietary on-site product registration with requirements for testing, testing protocols, performance thresholds levels, and application processes. This registration process replaces the previous requirement of having to be on the "List of Approved Systems and Products" (Approved List). When the Washington State Department of Health (DOH or "the department") has determined that a product meets the registration requirements that are established in the rules, the product will be placed on the "List of Registered On-site Treatment and Distribution Products" (Registered List). This document is the initial edition of the "Registered List".

Beginning September 15, 2005, manufacturers desiring to sell or distribute a new proprietary product for use in Washington State must obtain DOH registration of their product. Between now and March 15, 2007, the local health officer may permit proprietary on-site products that either are registered with the department or are on the "Approved List" (available at http://www.doh.wa.gov/ehp/ts/ww/pubs-ww-products.htm). After March 15, 2007, product registration becomes a condition of approval for use of all proprietary on-site products, and local health jurisdictions may only permit products that are on the "Registered List".

All types of sewage technologies must either have standards for use described in WAC 246-272A or departmental Recommended Standards and Guidance (RS&G) before the local health officer may permit them. Specific conditions for the use of each system technology or product are described in the RS&G documents relevant to the proprietary device. The most recently published edition of any RS&G can be obtained from local health offices and from the DOH website at the following Internet address: http://www.doh.wa.gov/ehp/ts/ww/pubs-ww-rsg.htm. Product models, rated capacities, treatment processes, treatment levels, and dimensional descriptions information are included in the tables of this document. In addition, terms used in this document, which need definition or clarification, are provided in Section 4 - Glossary of terms. This information is provided to facilitate equipment selection and promote proper application of the technology.

We welcome suggestions to improve this document. If you identify an error or have an idea about how to improve the usefulness of this document, feel free to contact staff in the Wastewater Management Program at the Washington State Department of Health, Office of Environmental Health and Safety at 360-236-3062.

Overview

Treatment components or distribution technologies, both proprietary and public domain (other than a sewage tank, or a gravel-filled drainfield fed either by a gravity or pressure distribution network), must be on the Department's "Registered List" before they may be permitted by the local health officer. Prior to placement on this list, the following must occur:

1. For all treatment components and distribution technologies other than sewage tanks, the Department of Health, with the assistance of the Technical Advisory Committee (TAC), may develop guidance in the form of Recommended Standards and Guidance

(RS&G) for a particular type of technology. Each RS&G may include application, design, installation, operation, monitoring and maintenance, and performance expectation information.

2. For proprietary treatment and distribution products, the manufacturer has submitted an application for registration containing the information required by WAC 246-272A. For proprietary treatment products, this information shall verify that the performance of the proprietary treatment product was tested according to the appropriate testing protocol and include the results of the testing.

3. The department will verify the information on the application and register the product if all the required information and data are included in the application.

Categories of Treatment Product and Treatment Levels

This document registers the category and treatment level that is met by a treatment product. Applicable terms to help understand this listing include:

Category 1 treatment product – a treatment component designed to treat sewage typical of a residential source when septic tank effluent is anticipated to be equal to or less than Treatment Level E (*See Table 1*).

Category 2 treatment product – a treatment component designed to treat high-strength sewage when septic tank effluent is anticipated to be greater than Treatment Level E. Examples of sources of high-strength sewage usually include restaurants, grocery stores, mini-marts, group homes, medical clinics, or residences.

Category 3 treatment product – a black water (human wastes) component of residential sewage. The primary examples are composting and incinerating toilets.

Treatment Level - one of six levels (A, B, C, D, E, & N) noted in Table 1 and used in WAC 246-272A to:

(a) Identify treatment component performance demonstrated requirements specified in WAC 246-272A-0110, and

(b) Match site conditions of vertical separation and soil type with treatment components. Treatment levels used in WAC 246-272A are not intended to be applied as field compliance standards. Their intended use is for establishing treatment product performance in a product testing setting under established protocols by qualified testing entities.

Table 1. Treatment Levels

Level	Parameters				
	$CBOD_5$ (mg/L)	**TSS (mg/L)**	**O&G (mg/L)**	**FC (#/100 ml)**	**TN (mg/L)**
A	10	10	----	200	----
B	15	15	----	1,000	----
C	25	30	----	50,000	----
D	25	30	----	----	----
E	125	80	20	----	----
N	----	----	----	----	20

Note:
Values for Levels A - D are maximum 30-day values (averages for $CBOD_5$, TSS, and geometric mean for FC.) All 30-day averages throughout the test period must meet these values in order to be registered at these levels. Values for Levels E and N are derived from full test averages.

SECTION 2 – List of Manufacturers of Registered Proprietary On-site Products

This section presents the current list of manufacturers who have submitted proprietary treatment and/or proprietary distribution products for DOH review and were found to meet the registration requirements in WAC 246-272A. This list notes the manufacturer, the manufacturer's contact information, products' names/models that have been reviewed and registered by DOH, and product treatment processes or type. To determine what the specific products are registered for, see Section 3.

If a certain manufacturer or product is not listed (either on this registered List or the Approved List), or if a listed manufacturer's specific model number is not included on the list (either this Registered List or the Approved List), the product IS NOT APPROVED for use in Washington State and may not be permitted by the local health officer.

Disclaimer

The manufacturers' contact information is presented here for information purposes only. Product registration and listing does not constitute departmental approval of marketing, advertising or labeling practices employed by a manufacturer, nor does it constitute an endorsement of these products, nor a preference among the manufacturers.

Manufacturers of Registered Proprietary On-site *Treatment* Products

Manufacturer/Contact Information	Product Name/Model	Rated Capacity (gpd)	Treatment Process
Bio-Microbics, Inc. 84250 Cole Parkway Shawnee, KS 66227 Tel: (800) 753-3278 Tel: (913) 422-0707 Fax: (913) 422-0808 E-mail: onsite@biomicrobics.com Web: http://www.biomicrobics.com	RetroFAST® 0.375 Treatment System	375	Attached & Suspended Growth
Delta Environmental Products 8275 Florida Blvd. PO Box 969 Denham Springs, LA 70726 Tel: (225) 665-6162 Fax: (225) 664-9467 E-mail: desales@deltaenvironmental.com Web: http://www.deltaenvironmental.com	ECOPOD E50 Fixed Film Wastewater Treatment System	500	Attached Growth
SeptiTech, Inc. 70 Commercial St. Suite #3 Lewiston, ME 04240 Tel: (207) 333-6940 Fax: (207) 333-6944 E-mail: info@septitech.com Web: http://www.septitech.com	SeptiTech Treatment System M400D M550D M750D	 440 660 880	Trickling Filter

Manufacturers of Registered Proprietary On-site *Treatment* Products

Manufacturer/Contact Information	Product Name/Model	Rated Capacity (gpd)	Treatment Process
WASTEWATER WAREHOUSE 9175 Kiefer Blvd. #199 Sacramento, CA 95826 Tel: (877) 888-4668x206 Fax: (916) 760-8581 E-mail: Wastewaterwarehouse@comcast.net Web: http://www.hootsystems.com	Hoot Aerobic Treatment Unit H-500A Model H-500A also as a component of the models H-500 AN/AW/AS/AT/ASD/ATD H-500AN/AW include a 760 gallon pump tank for delivery of treated effluent to a soil dispersal component. H-500AS/AT/ASD/ATD Include a 1010 gallon pump tank for delivery of treated effluent to a soil dispersal component. H-600A Model H-600A also as a component of the models H-600 AN/AT/ASD. H-600AN/AT/ASD include a 1010 gallon pump tank for delivery of treated effluent to a soil dispersal component. H-750A Model H-750A also as a component of the models H-750 AN/AW/AND. H-750AN/AW/AND includes a 1700 gallon pump tank for delivery of treated effluent to a soil dispersal component. H-1000A Model H-1000A also as a component of the models H-600 AN/AW/AND. H-1000AN/AW/AND include a 1469 gallon pump tank for delivery of treated effluent to a soil dispersal component.	500 600 750 1000	Suspended Growth

Manufacturers of Registered Proprietary On-site *Distribution* Products

Manufacturer/Contact Information	Product Name/Model	Type of Distribution Product
Hancor, Inc. PO Box 1047 Findlay, OH 45839-1047 Tel: (419) 422-6521 Fax: (419) 424-8300 E-mail: drainage@hancor.com Web: http://www.hancor.com	EnviroChamber Leaching System Standard High Capacity Pro Standard Pro 15” Narrow Pro 22” Narrow Pro ARC Standard	Gravelless Chamber

SECTION 3 – List of Registered On-site Treatment and Distribution Products

The following pages present the current list of registered treatment and distribution products by product type, under the categories and allowances provided in WAC 246-272A. The list includes lists of the following:

- Treatment products
  - Categories 1, 2, & 3
  - Treatment levels met as verified by test results using the protocol required by WAC 246-272A
  - Treatment standards 1 and/or 2 as verified by test results using the protocol for Category 1 systems in WAC 246-272A. This portion of the list is used in conjunction with WAC 246-272 and will be applicable only until June 30, 2007. Since the "List of Approved Systems and Products" became static on September 15, 2005, this list exists for manufacturers who apply to DOH to have their product placed on the "Registered List of Systems and Products," allowing newly listed technologies to be used to meet the treatment standards included in WAC 246-272.
  - Both proprietary and public domain
- Proprietary distribution technologies
  - Gravelless Distribution Products
  - Subsurface Dripline Products

To locate the contact information for a product, find the product in the alphabetical list of manufacturers in Section 2. Unless this list contains specific model numbers, all models listed in Section 2 can be assumed to meet the applicable requirements for listing in this section.

If a certain product is not listed, or if a listed manufacturer's specific model number is not included on the list (either this Registered List or the Approved List), the product IS NOT APPROVED for use in Washington State and may not be permitted by the local health officer.

Disclaimer

Product registration and listing does not constitute departmental approval of marketing, advertising, or labeling practices employed by a manufacturer, nor does it constitute an endorsement of these products, nor a preference among the manufacturers.

Registered On-site *Treatment* Products

Category 1

Product Name	TS1 (All)	TS1 (BOD & TSS only)	TS2 (All)	TS 2 (BOD & TSS only)	TL A	TL B	TL C	TL D	TL E	TL N
Proprietary										
ECOPOD E50								✓	✓	
Hoot Aerobic H-500A, H-600A,750A, & H-1000A		✓		✓				✓	✓	
RetroFAST 0.375									✓	✓
SeptiTech M400D, M550D, and M750D									✓	✓

Registered On-site *Distribution* Products

Gravelless Chamber Products

Product / Model	Unit Size Outside Dimensions W / L / H (inches)	Void Space per unit (cu. ft)	Void Space per linear foot (cu. ft)	Infiltrative Surface per unit (sq. ft.)	Infiltrative Surface per linear foot (sq. ft.)
EnviroChamber Leaching System					
Standard	34” x 75” x 12”	11.63	1.85	17.7	2.8
High Capacity	34” x 75” x 17.5”	18.3	2.93	17.7	2.8
Pro Standard	34” 76” x 11”	8.5	1.36	17.9	2.8
Pro 15” Narrow	15.38” x 86.9” x 12.38”	5.0	0.7	9.0	1.3
Pro 22” Narrow	22” x 86.9” x 12.38”	8.6	1.2	13.2	1.8
Pro ARC Standard	34.5” 60” x 13”	8.0	1.6	14.38	2.88

SECTION 4 - Glossary of Terms

Term	Meaning / Description
Approved List **(List became static on 9/15/05 and will remain in effect until 3/15/07)**	"List of Approved Systems and Products", developed annually and maintained by the department and containing the following: (a) List of proprietary devices approved by the department; (b) List of specific systems meeting Treatment Standard 1 and Treatment Standard 2; (c) List of experimental systems approved by the department; (d) List of septic tanks, pump chambers, and holding tanks approved by the department.
Attached Growth	A biological treatment process in which the microorganisms responsible for the conversion of the organic matter or other constituents to gases and cell tissues are attached to some inert medium such as rocks, slag, ceramic or plastic materials. Attached growth treatment processes are also known as fixed film processes.
ATU-Aerobic Treatment Unit	Aerobic treatment units provide aerobic biodegradation or decomposition of wastewater by bringing the wastewater in contact with air. These units come in different configurations and sizes, and incorporate a variety of mechanical (and non-mechanical) methods to enhance aerobic biodegradation of wastewater. Included are air pumps, air injectors, and biological-contact surfaces (such as pipes, fabric, grids, and rotating disks). Exposure of microorganisms to food sources occurs in a saturated setting. Exposure of microorganisms to air occurs in a saturated setting for processes other than rotating biological contactors.
BOD_5-Biochemical Oxygen Demand	A test which measures the molecular oxygen used by microorganisms during a five day incubation period at a temperature of 20^0C (68^0F) for the biochemical degradation of organic material (CARBONACEOUS DEMAND), and the oxygen used by microorganisms to oxidize inorganic material such as sulfides and ferrous iron. It also may measure the amount of oxygen used to oxidize reduced forms of nitrogen such as ammonia and organic nitrogen (NITROGENOUS DEMAND) if the microorganisms capable of mediating the reaction are present in the sample. .
$CBOD_5$- Carbonaceous Biochemical Oxygen Demand	Same as the 5-day biochemical oxygen demand (BOD_5) test, except that the NITROGENOUS DEMAND is prevented by addition of an inhibitory chemical to the sample, typically expressed in mg/L.
Composting Toilets	Composting toilets are designed to store and compost, by aerobic bacterial digestion, human urine and feces, which are non-water-carried. Toilets may include necessary venting, piping, electrical, and/or mechanical components.
Department	The Washington state department of health.
Design Flow	The maximum volume of sewage a residence, structure or other facility is estimated to generate in a twenty-four-hour period. It incorporates both an operating capacity and a surge capacity for the system during periodic heavy use events. The sizing and design of the on-site sewage system components are based on the design flow.
Disinfection	The process of destroying pathogenic microorganisms in sewage through the application of ultraviolet light, chlorination, or ozonation.

Term	Meaning / Description
Distribution Technology	Any arrangement of equipment and/or materials that distributes sewage within an onsite sewage system. (Same as "distribution product").
FC-Fecal Coliform (Bacteria)	Bacteria common to the digestive systems of warm-blooded animals that are cultured in standards tests. Counts of such organism are typically used to indicate potential contamination from sewage or to describe a level of needed disinfection. Generally expressed as colonies per 100ml.
Filtration	A process of separating particulate matter from a fluid by passing it through a permeable material. Typically a process incorporated later in the treatment process as part of the final clarification process, sometimes in advance of disinfection to improve the disinfection process. Filtration also can include the removal of suspended material in effluent by passing of the effluent through a porous medium in which filtration occurs within and on the surface of the filter bed, such as in a packed bed filter.
Gravelless Drainfield Systems	A drainfield system using preformed structures or gravel-substitute to provide void space for passage and storage of effluent, and to provide an interface with the exposed infiltrative surface. These are functions performed by gravel in the conventional drainfield. Four types of systems are approved: gravelless chamber systems, gravelless pipe systems, gravel-substitute systems, and geocomposites. Site, soil, application, design and installation requirements differ for the three system types.
Incineration Toilets	Self-contained devices that reduce non-water-carried human urine and feces to ash and vapor, including the necessary venting, piping, electrical, and/or mechanical components. The process is fueled by gas, fuel oil, or electricity.
Infiltrative Surface	The surface within a treatment component or soil dispersal component to which effluent is applied and through which effluent moves into original, undisturbed soil or other porous treatment media.
Mound Systems	These wastewater treatment systems are characterized by specified sand media placed upon the ground surface, with effluent being treated before discharge from the sand media into the underlying soil. They share the principal attributes of intermittent sand filters except that the media is not contained within a structure. This technology is generally used at sites with shallow soil conditions over a restrictive layer or elevated groundwater table. Proper operation requires influent to be distributed over the media in controlled, discrete doses. In order to achieve accurate dosing, these systems require either a pump or siphon system with associated pump chambers, electrical components and distribution pipe-work. Current Recommended Standards and Guidance require the use of timed dosing of the effluent and timed resting periods.
O&G-oil and grease (formerly referred to as FOG)	A component of sewage typically originating from food stuffs (animal fats or vegetable oils) or consisting of compounds of alcohol or glycerol with fatty acids (soaps and lotions). Typically expressed in mg/L. High levels of oils and greases in the wastewater stream may interfere with wastewater treatment efficiency.
OSS-On-Site Sewage System	An integrated arrangement of components, located on or nearby the property it serves, that conveys, stores, treats, and/or provides subsurface soil treatment and dispersal of sewage. It consists of a collection system, a treatment component or treatment sequence, and a soil dispersal component. An on-site sewage system also refers to a holding tank sewage system or other system that does not have a soil dispersal component.

Term	Meaning / Description
PBF- Packed Bed Filter	Packed bed filters (PBF), are also known as fixed film media units and trickling filters. These wastewater treatment systems are packed with filter media, such as sand, gravel, peat, plastic foam, or geotextile, for the aerobic biological and physical treatment of wastewater constituents. Aeration is achieved by air diffusing through the open voids in the media with oxygen diffusing into the cell mass attached to the media. Some units use a small fan to assist aeration. PBFs come in different configurations and sizes, but incorporate the following common elements: a container for holding the filter medium, the filtering media, a distribution or dosing system for applying the wastewater to be treated to the filtering media, and an underdrain system for removing the treated wastewater. These units can be either intermittently dosed (single-pass) or recirculating (multipass). As the wastewater trickles downward over the media, the bacteria extract the organic matter and use the dissolved oxygen from the wastewater. Exposure of microorganisms to both air and food sources occurs in an unsaturated setting.
Proprietary Product	A sewage treatment technology, method, or material subject to a patent or trademark. (Same as "proprietary on-site product").
Public Domain Technology	A sewage treatment and distribution technology, method, or material not subject to a patent or trademark.
Pump Chamber	A tank or compartment following the septic tank or other pretreatment process which contains a pump, floats and volume for storage of effluent. In timer-controlled pressure distribution systems, this is frequently called a "surge tank" or "equalization tank." If a siphon is used, in lieu of a pump, this is called a "siphon chamber."
Registered List	"List of Registered On-site Treatment and Distribution Products", developed and maintained by the department and containing a list of treatment and distribution products that meets the requirements for product registration in WAC 246-272A.
Residential Sewage	Sewage having the consistency and strength typical of wastewater from domestic households.
Rotating Biological Contactor (RBC)	A type of attached growth treatment process consisting of disks oriented on a drive shaft which rotates, alternately exposing the attached microorganisms to the atmosphere and the wastewater.
Sand Filters	Wastewater treatment systems characterized by a relatively large container and means for distributing septic tank effluent atop a layer, or layers, of graded sand (or gravel) where, as the wastewater moves downward, it undergoes biochemical aerobic biological & physical treatment. Aeration is achieved by air diffusing through the open voids in the sand with oxygen diffusing into the cell mass attached to the media. There are many different designs of sand filter, but they can generally be divided into two types: single-pass filters, and multiple-pass filter. The RS&G's for the sand filter technologies address three single-pass sand filters (intermittent, sand-lined drainfield trench, and stratified) and one multiple-pass filter (recirculating gravel filter system).
Sequencing Batch Reactor (SBR)	A sequential suspended growth process in which all major steps, flow equalization, aeration, and clarification, occurs in the same tank in sequential order. SBRs include intermittent flow batch reactors and continuous flow systems.
Sewage	Any urine, feces, and the water carrying human wastes including kitchen, bath, and laundry wastes from residences, building, industrial establishments or other places. For the purposes of this document, "sewage" is generally synonymous with domestic wastewater. Also see "residential sewage."

Term	Meaning / Description
Sewage Quality	Contents in sewage that include: (a) $CBOD_5$, TSS, and O&G; (b) Other parameters that can adversely affect treatment. Examples include pH, temperature, and dissolved oxygen; (c) Other constituents that create concerns due to specific site sensitivity. Examples include fecal coliform and nitrogen.
Soil Dispersal Component	A technology that releases effluent from a treatment component into the soil for dispersal, final treatment, and recycling.
Subsurface Drip System	An efficient pressurized wastewater distribution system that can deliver small, precise doses of effluent to soil surrounding the drip distribution piping (called dripline) as described in the department's "Recommended Standards and Guidance for Subsurface Drip Systems.
SSAS-Subsurface Soil Absorption System	A soil dispersal component of trenches or beds containing either a distribution pipe within a layer of drainrock covered with a geotextile, or an approved gravelless distribution technology, designed and installed in original, undisturbed, unsaturated soil providing at least minimal vertical separation as established this chapter, with either gravity or pressure distribution of the treatment component effluent.
Suspended Growth	A biological wastewater treatment process in which microorganisms responsible for the conversion of the organic matter or other constituents in the wastewater to gases and cell tissue are maintained in suspension within the liquid.
TN-Total Nitrogen	A measure of the complete nitrogen content in wastewater, typically expressed as mg/L. The forms of nitrogen of greatest interest are nitrate ($NO3^-$), nitrite ($NO2^-$), ammonia (NH3), and organic nitrogen; all these forms of nitrogen, as well as nitrogen gas (2), are biochemically interconvertible and are components of the nitrogen cycle; the total nitrogen content of wastewater can be determined by measuring nitrate, nitrite, ammonia, and Kjeldahl nitrogen.
TS1-Treatment Standard 1	A thirty-day average of less than 10 milligrams per liter of biochemical oxygen demand (five-day BOD_5), 10 milligrams per liter of total suspended solids (TSS), and a thirty-day geometric mean of less than 200 fecal coliform per 100 milliliters.
TS2-Treatment Standard 2	A thirty-day average of less than 10 milligrams per liter of biochemical oxygen demand (five-day BOD_5), 10 milligrams per liter of total suspended solids (TSS), and a thirty-day geometric mean of less than 800 fecal coliform per 100 milliliters.
TSS-Total Suspended Solids	Suspended solids refer to the dispersed particulate matter in a wastewater sample that may be retained. by a filter medium, typically expressed in mg/L. Suspended solids may include both settleable and unsettleable solids of both inorganic and organic origin. This parameter is widely used to monitor the performance of the various stages of wastewater treatment, often used in conjunction with BOD5 to describe wastewater strength. The test consists of filtering a known volume of sample through a weighed filter membrane that is then dried and re-weighed.
Treatment Component	A technology that treats sewage in preparation for further and/or dispersal into the soil environment. Some treatment components, such as mound systems, incorporate soil dispersal components in lieu of separate treatment and soil dispersal components. (Same as "treatment product").

Term	Meaning / Description
Treatment Level	One of six levels (A, B, C, D, E, & N) to: (a) Identify treatment component performance demonstrated through requirements specified in WAC 246-272A-0110; and (b) match site conditions of vertical separation and soil type with treatment components. Treatment levels used in these rules are not intended to be applied as field compliance standards. Their intended use is for establishing treatment product performance in a product testing setting under established protocols by qualified testing entities.
Treatment Sequence	Any series of treatment components that discharges treated sewage to the soil dispersal component.
Trickling Filter process	An attached growth treatment process that uses porous media (usually rock or plastic) contained in a tank, which serves as a surface on which microbiological growth occurs. Wastewater is sprayed into the air (aeration) over the top of the media then allowed to trickle through the media at regular intervals. Microorganisms attached to and growing on the media, break down organic material in the wastewater.
UMF—Upflow Media Filter	Upflow media filters involve the biological treatment of septic tank effluent as it flows upward through filter media within a containment vessel. Much of the treatment is through attached growth anaerobic processes as the wastewater passes upward through the media. Various sizes and types of media can be used either singly or in combination in succeeding layers. The anaerobic phase can be followed by an aerobic phase to produce a high quality effluent.
30-day Average	The average of daily measurements over a calendar month calculated as the sum of all daily measurements taken during a calendar moth divided by the number of daily measurements taken during that month.